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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,514	08/27/2003	Jun Ohashi	P24131	3987
7055	7590	11/08/2004	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			PAIK, SANG YEOP	
			ART UNIT	PAPER NUMBER
			3742	

DATE MAILED: 11/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,514

Applicant(s)

OHASHI ET AL.

Examiner

Sang Y Paik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/4/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nobori et al (US 5,616,024) in view of Arena et al (US 5,635,093) and Mahawili (US 5,059,770) or Carman et al (US 5,294,778), and Yamada et al (US 6,134,096) or Ushikawa (US 6,140,256).

Nobori et al discloses the structure claimed including a ceramic substrate with a heating body having two or more circuits embedded therein and a temperature measuring unit such as a thermocouple embedded in a bottomed-hole formed on the surface opposite to the heating face. However, Nobori et al does not disclose a control unit, memory unit and a calculation unit to control the heating temperature so that the temperature of the outer peripheral portion among the circuits is made higher than the inner peripheral temperature, and a wafer being heated separate apart from the heating face of the ceramic substrate.

Arena et al shows a control system having a regulating means for regulating and supplying power to the heating elements, a processing means the comparison means that store and calculate the measured temperatures with the reference values to further control the heating elements. Mahawili and Carman show a heating body divided into a plurality of heating circuits that are independently controlled so that the outer peripheral heating temperature can be made higher than the inner peripheral heating temperature. In view of Arena et al, it would have been

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obvious to one of ordinary skill in the art to adapt Nobori et al with the temperature sensing means including the processing and comparison means to store and calculate by comparing the detected values with the reference values to subsequently control the heating elements accordingly; and further in view of Mahawili and Carman et al, adapt Nobori et al with the outer heating circuit having the capability to make its temperature equal or higher than the inner portion to maintain the desired heating temperature across the heater substrate.

Yamada et al and Ushikawa show it is well known in the art to provide a ceramic heater with a plurality of mounds or pins to support a wafer separate from the heating surface to more uniformly heat the wafer. In view of Yamada et al or Ushikawa, it would have been obvious to adapt Nobori et al, with the wafer being positioned separate from the heating surface to allow a more uniform heat radiation from the heating surface of the ceramic heater.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nobori et al in view of Arena et al and Mahawili or Carman et al, and Yamada et al or Ushikawa, as applied to claims 1-3 and 5-7 above, and further in view of Aoki et al (US 6,121,579).

Nobori et al in view of Arena et al and Mahawili or Carman et al, and Yamada et al or Ushikawa, discloses all the structure claimed except the temperature measuring element is a thermoviewer.

Aoki et al shows that it is known in the art to use a thermoviewer or thermocouple as a temperature sensing element. In view of Aoki et al, it would have been obvious to one of ordinary skill in the art to adapt Nobori et al, as modified by Arena et al and Mahawili or Carman et al, and Yamada et al or Ushikawa, with the thermoviewer in place of the thermocouple as the temperature sensing element to effectively measure the temperature across the heater plate.

Response to Amendment

4. On the pages of the response/amendment filed on 8/4/04 by the applicant, a different application number is listed on the upper right corner. It is reminded to the applicant that a correct application number is reflected in all responses/amendments.

Response to Arguments

5. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

The applicant argues Nobori does not disclose the division of the heating pattern, and even if there is the division, there is no intention of controlling the inner peripheral portion and the outer peripheral portion independently. This argument is not deemed persuasive. Nobori clearly shows an outer peripheral heater and an inner peripheral heater that provide two heating zones as shown in Figures 16 and 17.

With respect to Arena et al, the applicant argues there is no motivation to combine Arena et al with Nobori because Arena provides no pattern between patterns, and Arena shows a metal as the base plate. This argument is not deemed persuasive. Arena shows a plurality of heating elements as is in Nobori, and it also shows clearly shows that base plate can also be made of boron nitride or graphite which are ceramics. However, it is noted that Arena is applied to teach the control system where it shows the power regulating means and processing means to apply the desired power or heat to a particular heating zones. Arena teaches that this control system ensures to achieve the desired heating temperature across the heating surface. This advantage would also have been obvious and applicable to Nobori which is in the same field of endeavor and pertinent to the problems involving the processing semiconductor wafers.

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Also, Mahawili and Carman are further applied to show the application of applying varying heating temperatures in the heating surface to more specifically meet the desired heating temperature. It is also noted that Carman is not applied to teach the particular ceramic substrate with a heater structure as argued by the applicant, and Mahawili for the same reason, but Carman and Mahawili are applied to shows that it is known in the art to provide varying temperatures to heat a wafer as desired by one of ordinary skill in the art to achieve a desired heating distribution to more effectively heat the wafer.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y Paik whose telephone number is 703-308-1147. The examiner can normally be reached on M-F (9:00-4:00) First Friday Off.

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The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Paik

Sang Y Paik
Primary Examiner
Art Unit 3742

syp